



P.O. Box 66800  
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## MATERIAL SAFETY DATA SHEET

### I. PRODUCT INFORMATION

#### TRADE NAME (COMMON NAME OR SYNONYM)

Copper Tubing (All sizes and wall thicknesses including; Type K, L, M, DWV, Ref, K/OXY/MED and ARC/OXY/MED)

CHEMICAL NAME	FORMULA	MOLECULAR WEIGHT
Copper	Cu	63.55

CONTACT	PHONE NUMBER	ISSUED DATE	SUPERCEDES
Robert D. Libby	618/337-6000	January 1, 2004	October 8, 2003

### II. COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL OR COMPONENT	C.A.S. No.	WT. %	PERMISSIBLE AIR CONC. (mg/cu.m)	
			OSHA	ACGIH
Copper	7440-50-8	99.9+	Dust - 1.0 mg/cu.m	1.0 mg/cu.m
			Fume - 0.1 mg/cu.m	0.2 mg/cu.m

### III HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY	INGESTION	INHALATION	SKIN	CARCINOGENICITY
		X		Not listed as a carcinogen by NTP, IARC, or OSHA

#### ACUTE OVER EXPOSURE (SYMPTOMS AND EFFECTS)

A. Fumes are created by heating metallic copper past its melting point. Proper soldering or sweating copper tubes will not produce fumes. Brazing of copper tube may produce fumes. Consult Copper Development Association, Inc. (CDA) "The Copper Tube Handbook" for proper joining methods, and recommended solders, fluxes and filler metals (see CDA link on Cerro Flow Products, Inc. website to obtain handbook). Use approved ventilation or respiratory protection if the possibility of fume exists. Inhalation of fume may cause irritation of the respiratory tract or metal fume fever (chills, fever, aching muscles, dry mouth and throat, headache, nausea, vomiting, and diarrhea). Onset may be delayed several hours.

B. Ingestion of metallic copper is not a primary route of exposure. Metallic copper may be moderately irritating to the gastrointestinal tract.

#### CHRONIC OVEREXPOSURE (SYMPTOMS AND EFFECTS)

No long term effects. Skin irritation or discoloration of the skin and hair are short term.

#### MEDICAL CONDITIONS POSSIBLY AGGRAVATED

Wilson's Disease (an abnormal genetic condition) could be aggravated.

### IV. FIRST AID MEASURES

*Inhalation:* Remove from exposure; place individual under care of a physician.

*Ingestion:* Call a physician, induce vomiting in conscious individual may be recommended.

*Skin or Eyes:* Perform basic first aid consistent with the injury and seek further medical treatment if needed.

### V. FIRE FIGHTING MEASURES

F LASH POINT	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS IN AIR(% BY VOL.)
Not Applicable	Not Applicable	Not Applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS	FIRE EXTINGUISHING AGENTS RECOMMENDED	FIRE EXTINGUISHING AGENTS TO AVOID
Not Applicable	No specific agents recommended	No specific agents recommended

#### SPECIAL FIRE FIGHTING PRECAUTIONS

Copper tube will not burn or give off toxic gases in normal fires. Use fire fighting methods compatible with surrounding materials.

## **VI. RELEASE MEASURES**

### **SPILLS OR LEAKS**

Proper instillation of copper tubes will not produce dust. Consult Copper Development Association, Inc. (CDA) "The Copper Tube Handbook" for proper joining methods ( See CDA link on Cerro Flow Products, Inc. website to obtain handbook). Vacuuming is preferred for dust. Do not use compressed air for cleaning. Recycle unused or scrap copper tube at a local scrap metal dealer.

## **VII. HANDLING AND STORAGE**

### **NORMAL HANDLING**

Avoid conditions that create fumes or fine dust. Use of approved respirators is required where adequate ventilation cannot be provided. Do not use copper tubing where incompatible materials may be present, (see section X).

### **STORAGE**

Do not store near incompatible materials, see Section X.

## **VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION**

### **ENGINEERING CONTROLS**

Local exhaust is recommended for dust and/or fume generating operations where airborne exposure may exceed permissible air concentrations.

### **PERSONAL HYGIENE**

Avoid inhalation or ingestion. Practice good housekeeping and personal hygiene procedures. Showering is recommended if significant dust exposure occurs.

### **SPECIAL: PRECAUTIONS / PROCEDURES / LABEL INSTRUCTIONS**

No special precautions.

### **LABEL SIGNAL WORD:**

CAUTION

### **RESPIRATORY PROTECTION**

Where airborne exposures may exceed OSHA/ACGIH permissible air concentrations, the minimum respiratory protection recommended is a negative pressure air purifying respirator with cartridges that are NIOSH/MSHA approved against dust, fumes, and mists having a TWA not less than 0.05 mg/cu.m.

### **EYES AND FACE**

Safety glasses recommended when dust or shavings may exist.

### **OTHER CLOTHING AND EQUIPMENT**

Protective clothing is recommended to prevent burns during instillation of tube or splattering of fluxes, solders or filler metals.

## **IX. PHYSICAL / CHEMICAL PROPERTIES**

### **MATERIAL IS (AT NORMAL CONDITIONS)**

Solid

### **APPEARANCE AND ODOR**

Yellow-red metal, various shapes and sizes.

### **MELTING POINT (DEGREES C)**

1,083

### **BOILING POINT (DEGREES C)**

2,595

### **SPECIFIC GRAVITY (H2O = 1)**

8.96

### **VAPOR DENSITY (AIR = 1)**

Not applicable

### **SOLUBILITY IN WATER (% BY WT.)**

Insoluble

### **pH**

Not Applicable

### **VAPOR PRESSURE (mm Hg)**

Not Applicable

### **EVAPORATION RATE**

Not Applicable

## **X. STABILITY AND REACTIVITY**

### **STABILITY - Stable**

### **CONDITIONS TO AVOID - Not Applicable**

### **INCOMPATIBILITY (MATERIALS TO AVOID)**

Reacts violently with acetylene, hydrogen peroxides, gaseous chlorine, ammonia nitrate, bromates, chlorates, hydrogen sulfide, lead azide, hydrazine.

### **HAZARDOUS DECOMPOSITION PRODUCTS**

Copper does not decompose

### **HAZARDOUS POLYMERIZATION**

Will not occur

### **CONDITIONS TO AVOID**

Not Applicable

## XI. TOXICOLOGICAL INFORMATION

<u>LD50 (SPECIES, ROUTE)</u>	<u>LC50 (SPECIES)</u>	<u>MUTAGENICITY</u>
Copper: 3.5 mg/kg (mouse, intraperitoneal)	Not Available	Not positive in Ames test

## XII. ECOLOGICAL

<u>ECOTOXICITY</u>	<u>ENVIRONMENTAL FATE</u>
The LC50 for copper in the fathead minnow is 12 mg/L.	Acid solutions promote mobility and solubility of copper.

## XIII. DISPOSAL CONSIDERATIONS

### WASTE DISPOSAL METHODS

Recycling or disposal must be in accordance with the appropriate federal, state, or local statutes or regulations.

### RCRA STATUS OF UNUSED MATERIAL

Copper is not a RCRA metal. Recycle unused or scrap tube at a local scrap metal dealer.

## XIV. TRANSPORT

### DOT REGULATION AND ID (OR PIN) NUMBER

Not regulated by DOT.

## XV. REGULATORY INFORMATION

### WHMIS CLASSIFICATION, SARA REGULATION AND OTHER INFORMATION

WHMIS does not classify this material

TSCA Status ----- On TSCA Inventory

Regulated under SARA Title III:

Sect. 302 ----- None

Sect. 311/312 ----- Immediate and Delayed

Sect. 313 Chemicals ----- Copper

CERCLA Reportable Quantity ----- 5,000 pounds for Copper Powder

## XVI. REFERENCES

### PERMISSIBLE CONCENTRATION REFERENCES

OSHA regulations for airborne contaminants 29 CFR 1910.1000 and 1018; ACGIH Threshold Limit Values for Chemical Substances

### HAZARD INFORMATION REFERENCES

*Documentation of the Threshold Limit Values*, 6th Ed., ACGIH  
*Patty's Industrial Hygiene and Toxicology*, Vol. 2A, 3rd Rev. Ed., 1981  
*NFPA Fire Protection Guide on Hazardous Materials*, 10th Ed., 1981  
*Handbook of Toxic and Hazardous Chemicals*, Sittig, Marshall, 1981  
*TOMES Plus Database*, Micromedex, Inc., Vol. 17, 1993  
*DATATOX Database*, Spectrum Research, Inc., Version 2.0, 1992

### GENERAL

*Handbook of Chemistry and Physics*, 57th Ed., 1976-77, Weast, R. C., Editor, CRC Inc.  
*American Welding Society, Welding Handbook Volume 2*, 1995.  
*Copper Development Association, The Copper Tube Handbook*, 1999.

## XVII. ADDITIONAL INFORMATION

INFORMATION (HAZARDS, FIRST AID, ETC.) IS ABBREVIATED. MORE INFORMATION IS CONTAINED IN REFERENCES FOUND IN SECTION XVI

No additional information.

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